

# **NOTICE**

**All drawings located at the end of the document.**



ENVIRONMENTAL RESTORATION  
STANDARD OPERATING PROCEDURE  
FOR ROUTINE SOIL REMEDIATION  
FY02 NOTIFICATION #03-05  
IHSS GROUP 900-1



January 2003



DOCUMENT CLASSIFICATION  
REVIEW  
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LA-A-001241

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## ACRONYMS

AL	action level
ALARA	as low as reasonably achievable
D&D	Decontamination and Decommissioning
DOE	Department of Energy
ER	Environmental Restoration
ER RSOP	Environmental Restoration RSOP for Routine Soil Remediation
FY	Fiscal Year
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
PAC	Potential Area of Concern
PCB	Polychlorinated Biphenyls
PCOC	potential contaminant of concern
POC	Point of Compliance
POE	Point of Evaluation
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RSOP	RFCA Standard Operating Protocol
SVOC	semi-volatile organic compound
UBC	Under Building Contamination
VOC	volatile organic compound

## 1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002a) Fiscal Year (FY) 03 Notification includes the notification to remediate Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern (PACs), and Under Building Contamination (UBC) Sites at the Rocky Flats Environmental Technology Site (RFETS) Industrial Area (IA) during FY03. The purpose of this Notification is to invoke the ER RSOP for IHSS Group 900-1. Activities specified in the ER RSOP are not reiterated here, however, deviations from the ER RSOP are included where appropriate.

Soil with contaminant concentrations greater than the new RFCA Action Levels (ALs) and associated debris will be removed in accordance with RFCA and the ER RSOP. If remediation starts prior to the approval of the new ALs, remediation will be conducted using the old Tier I and Tier II ALs, and a contact record will be submitted to the agencies documenting the use of the old ALs.

The IHSS Group is shown on Figure 1, and the proposed remediation sites covered under ER RSOP Notification #03-05 are listed in Table 1.

**Table 1**  
**FY02 Potential Remediation Areas for IHSS Group 900-1**

<b>IHSS Group</b>	<b>IHSS/PAC/UBC Site</b>	<b>PCOCs</b>	<b>Media</b>	<b>Estimated Remediation Volume</b>
900-1	UBC 991, Weapons Assembly and R&D	Uranium Plutonium Metals VOCs	Surface and Subsurface Soil Beneath Slab	> 1 cy
	Radioactive Site Building 991, IHSS 900-173	Uranium Plutonium Metals VOCs	Surface and Subsurface Soil Beneath Asphalt	> 1 cy
	Radioactive Site 991 Steam Cleaning Area, IHSS 900-184	Uranium Plutonium Metals VOCs	Surface and Subsurface Soil Beneath Asphalt	> 1 cy
	Building 991 Enclosed Area, PAC 900-1301	Uranium Plutonium Metals VOCs	Surface and Subsurface Soil Beneath Asphalt	> 1 cy
	Explosive Bonding Pit, PAC 900-1307	Uranium Metals	Surface Soil including soil beneath slab and pit	< 1 cy

VOC – volatile organic compound

## 2.0 IHSS GROUP 900-1

IHSS Group 900-1 includes UBC 991, Weapons Assembly and R&D, IHSS 900-173, Radioactive Site Building 991, IHSS 900-184, Radioactive Site 991 Steam Cleaning Area, PAC 900-1301, Building 991 Enclosed Area, and PAC 900-1307, Explosive Bonding Pit. The IHSS/PAC/UBC locations are shown on Figure 2.

## **2.1 Potential Contaminants of Concern**

Potential contaminants of concern (PCOCs) at IHSS Group 900-1 are listed in Table 1 and were determined based on process knowledge and data collected during previous studies (DOE 1992-2001, DOE 2001, DOE 2000)

## **2.2 Project Conditions**

The following conditions are present at this site

- UBC 991 consists of various structures (refer to Figure 2) The Building 991 basements are located below grade, as are Corridors A, B and C, and Buildings (Vaults) 996, 997, 998 and 999
- Buildings 991, 992, 984 and 989 are located in a land depression, as are the two transformers located to the east of Building 991 Building 895, the Filter Plenum Building, is located on the hillside north of Building 991
- Buildings 980 and 968 are no longer present and were located on top of the hill to the north of Building 991 The Building 980 slab contains a large concrete rubble pile
- PAC 900-1301 is located south of Building 991 and is no longer enclosed
- IHSS 900-175 makes up IHSS Group 900-4 and is not part of this notification
- PAC 900-1308 makes up IHSS Group 900-5 and is not part of this notification This site has been approved for no further action
- PAC 900-1306, associated with the PCB transformers to the east of Building 991, is not part of this notification This PAC was previously remediated and proposed for no further action in the Annual Update for the Historical Release Report (DOE 1996)
- IHSS 900-173 and IHSS 900-184 are drained by a storm drain that flows to the south This drain also receives flow from at least one of the Building 991 roof drains
- The area south of Building 991 is drained by a concrete drainage ditch, which flows to the southeast At least one of the Building 991 roof drains discharges to the ditch
- There is a below-grade drain outside the basement doors on the east side of Building 991
- Shallow groundwater may be present in the area around Building 991
- Building 993 has been demolished All that remains are the concrete slab and pit

## **2.3 Remediation Plan**

This RSOP Notification remediation plan for IHSS Group 900-1 includes the following objectives

- Grout or remove any remaining sections of Building 991 and Building 992 drains, remove any other remaining building structures (e g , slabs and foundations) within 3 feet of current grade, and recycle in accordance with the RSOP for Recycling Concrete (DOE 1999),
- Remove the Building 993 slab and pit, and recycle in accordance with the RSOP for Recycling Concrete (DOE 1999), or dispose at an appropriate facility, pending waste characterization,
- Remove any other remaining Building 993 utilities and components within three feet of current grade,
- Remove soil with contaminant concentrations greater than RFCA ALs,
- Remove soil with contaminant concentrations less than RFCA ALs if indicated through the stewardship evaluation (Section 2 4), and
- Collect confirmation samples in accordance with the Industrial Area Sampling and Analysis Plan (IASAP) (DOE 2001a)

This notification assumes that the Decontamination and Decommissioning Program will remove the concrete slabs and foundations associated with Buildings 991 and 992. It is anticipated that after remediation there will be areas at this site with concentrations of metals, radionuclides, and organics greater than background plus two standard deviations or method detection limits, but below RFCA ALs

## **2.4 Stewardship Evaluation**

Based on the PCOCs (Table 1 and Section 2 1) and the ER RSOP (DOE 2002a), it is anticipated that all contamination above RFCA ALs will be remediated. Figure 2 shows the potential remediation area.

Because the full extent of excavation and remediation is not known at this time, an additional stewardship evaluation will be conducted during remediation using the consultative process. A new map of residual contamination will be generated after remediation. The following sections present the stewardship evaluation.

### **2.4.1 Proximity to Other Contaminant Sources**

IHSS Group 900-1 is in the RFETS IA. Part of UBC 991 (i e , the 991 Tunnel and Building 999, and the eastern edge of Building 991) is located near other potential contaminant sources (i e , IHSS 900-175 and PAC 900-1306). However, both sources are surface sites located many feet above the UBC. In addition, the PCOCs associated with PAC 900-1306 (i e , PCBs and related congeners) are very different than those associated

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with UBC 991 PAC 900-1307 is not located near any other potential contaminant sources. Therefore, other contaminant sources do not affect stewardship considerations at IHSS Group 900-1.

#### **2.4.2 Surface Water Protection**

Surface water protection includes the following considerations:

***Is there a pathway to surface water from potential erosion to streams or drainages?***

There are pathways to surface water from the areas around Building 991 and Building 993. There is a storm drain that drains IHSS 900-173 and IHSS 900-184 to the south. There is also a concrete drainage ditch (culvert) that drains the area south of Building 991, including PAC 900-1301. In addition, there is a storm drain to the west of Building 993 and PAC 900-1307 that may drain the area around PAC 900-1307.

***Do characterization data indicate there are contaminants in surface soil?***

Existing surface soil data for IHSS Group 900-1 indicate the presence of some contaminants, but all concentrations are below RFCA ALs.

***Do monitoring results from Points of Evaluation (POEs) or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?***

There are no POEs or POCs in the vicinity of IHSS Group 900-1. Water quality at POEs and POCs are impacted by multiple potential sources within the Industrial Area and the Buffer Zone.

***Is the IHSS Group in an area with high erosion potential, based on the 100-Year Average Erosion Map?***

Not applicable. The 100-Year Average Erosion Map does not include areas in the IA.

#### **2.4.3 Monitoring**

Monitoring includes the following considerations:

***Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?***

There are no POEs or POCs near IHSS Group 900-1. The closest POEs and POCs monitor impacts from large areas that include many potential contaminant sources.

***Can the impact be traced to a specific IHSS Group?***

Impacts can not be traced to IHSS Group 900-1.

***Are additional monitoring stations needed?***

Not applicable.

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***Can existing monitoring locations be deleted if additional remediation is conducted?***

Existing wells should not be deleted if remediation is conducted within IHSS Group 900-1, because the wells in the area are monitoring contamination plumes created from areas outside IHSS Group 900-1

**2.4.4 Stewardship Actions and Recommendations**

The current stewardship actions and recommendations for IHSS Group 900-1 are as follows

- Use Best Management Practices to reduce erosion into surface water drainage
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following
  - Fencing and signs to restrict access, and
  - Soil excavations controlled through the Site Soil Disturbance Permit process
- Implement long-term stewardship actions, including the following
  - Prohibitions on construction of buildings in the IA,
  - Restrictions on excavations or other soil disturbance, and
  - Prohibitions on groundwater pumping in the area of IHSS Group 900-1

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions

**2.5 Accelerated Action Remediation Goals**

ER RSOP remedial action objectives include the following

- 1 Provide a remedy consistent with the RFETS goal of protection of human health and the environment,
- 2 Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls, and
- 3 Minimize the spread of contaminants during implementation of accelerated actions

The accelerated action remediation goals for IHSS Group 900-1 include the following

- Remove any remaining building slab and foundation within 3 feet of grade, and the Building 993 pit, and recycle in accordance with the RSOP for Recycling Concrete (DOE 1999), or dispose at an appropriate facility, pending waste characterization,
- Disrupt pathway to surface water by plugging ends and/or removing sections of building drains,

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- Remove any other remaining structures and piping within 3 feet of current grade, and
- Remove soil with contaminant concentrations greater than RFCA ALs

## **2.6 Treatment**

Not applicable

## **2.7 Project-Specific Monitoring**

High-volume air samplers may be used at the remediation area consistent with work controls to determine airborne radioactivity concentrations. Approximate locations of air samplers are shown on Figures 4 and 5.

## **2.8 Resource Conservation and Recovery Act (RCRA) Units and Intended Waste Disposition**

Buildings 991, 996 and 998 are currently being used to store RCRA-regulated wastes. Some areas are listed on the Master List of RCRA Units as Permitted Areas (e.g., Unit 991.1). RCRA-regulated areas will be closed in accordance with Colorado Hazardous Waste Act (CHWA) requirements prior to building demolition.

Building 993 was listed on the Master List of RCRA Units as a Permitted Area. The area was closed in accordance with CHWA closure requirements prior to building demolition utilizing the Facility Disposition RSOP (DOE 2002b).

## **2.9 Administrative Record Documents**

DOE, 1992-2001, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado

DOE, 1996, Annual Update, Historical Release Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 1999, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2000, Industrial Area Data Summary Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, 2002a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January

DOE, 2002b, RFCA Standard Operating Protocol for Facility Disposition Notice for Building 993, Rocky Flats Environmental Technology Site, Golden, Colorado, October

## **2.10 Projected Schedule**

Remediation of IHSS Group 900-1 is expected to begin in February of FY03

## **3.0 PUBLIC PARTICIPATION**

ER RSOP Notification #03-05 activities will be discussed at the January 2003 ER/D&D Status meeting

## **4.0 REFERENCES**

DOE, 1992-2001, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado

DOE, 1996, Annual Update, Historical Release Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 1999, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2000, Industrial Area Data Summary Report, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, 2002a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, Colorado, January

DOE, 2002b, RFCA Standard Operating Protocol for Facility Disposition Notice for Building 993, Rocky Flats Environmental Technology Site, Golden, Colorado, October

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Figure 1

IHSS Group 900-1 Location Map

EXPLANATION

IHSS Group

900 1

Standard Map Feature

Buildings and structures

Mobile buildings

Lakes and ponds

Streams, creeks, or drainage features

Fences and barriers

Gravel roads

Dirt roads

Solar Energy Ponds (EPs)

Industrial nearshore boundary

N

DATA SOURCE BASE FEATURES:

Aerial Photography

Topographic Map (1:50,000)

Topographic Map (1:25,000)

Topographic Map (1:10,000)

Topographic Map (1:5,000)

Topographic Map (1:2,500)

Topographic Map (1:1,250)

Topographic Map (1:625)

Topographic Map (1:312)

Topographic Map (1:156)

Topographic Map (1:78)

Topographic Map (1:39)

Topographic Map (1:19)

Topographic Map (1:9)

Topographic Map (1:4)

Topographic Map (1:2)

Topographic Map (1:1)

Topographic Map (1:0.5)

Topographic Map (1:0.25)

Topographic Map (1:0.125)

Topographic Map (1:0.0625)

Topographic Map (1:0.03125)

Topographic Map (1:0.015625)

Topographic Map (1:0.0078125)

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Topographic Map (1:0.000244140625)

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Topographic Map (1:0.0000000298023223876953125)

Topographic Map (1:0.00000001490116119384765625)

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Topographic Map (1:0.000000000058207660913467407171875)

Topographic Map (1:0.0000000000291038304567337035859375)

Scale 1:250,000  
1 inch represents approximately 5.8 miles

State Plane Coordinate System  
North Carolina  
Datum: NAD83

U.S. Department of Energy  
Regional Technical Site

GIS Dept. 303-496-7707








December 03, 2002

**Figure 2**  
**Potential Remediation Areas**  
**IHSS Group 900-1**

### EXPLANATION

- |                                     | UBCS for | SS G     | 900   |
|-------------------------------------|----------|----------|-------|
| <input type="checkbox"/>            | IHSS f   | IHSS Gro | 900-  |
| <input checked="" type="checkbox"/> | PACS f   | HSS Gro  | 900   |
| <input type="checkbox"/>            | IHSS no  | IHSS Gro | 900-1 |
| <input type="checkbox"/>            | PACS no  | IHSS Gro | 900 1 |

## Standard Model Features

- |   |  |        |
|---|--|--------|
|  | Buildings and her                      | uc nes |
|  | emolished buildings                    |        |
|  | Lakes and ponds                        | he     |
|  | Streams, ditches, or drainage features |        |
|  | Fence and the be                       |        |
|  | aved roads                             |        |
|  | Dirt roads                             |        |

**DATA SOURCE BASE FEATURES:**  
 FBI  
 Historical Release Report (HRR)  
 Not Armed Update  
 Sept. 30, 1987  
 Published National Substance (NS) (NS)  
 DOE, 1992, 1994 Report and Subsequent Updates  
 Buildings, fences, cryptographic records and other  
 structures from 1981 until 1994  
 captured by GAG RSE, Las Vegas  
 Digitized from the orthographic alpha. 1/95



Scale 1 1450  
1 inch repr sen appr imat ly 121 feet



State Plane Coordinate System  
Colorado Central Zone  
Datum NAD27

**U S Department of Energy  
Rocky Flats Environmental Technology Site**

**GIS Dept. 303-908-7707**

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